

Henry Gong, Jr., M.D.

Contributions to Public Health and Improvement in Air Quality

September 27, 2007



Air Resources Board
California Environmental Protection Agency

Good morning Chairman Nichols and members of the Board. This morning, instead of the usual health update, we will remember the life and career of Board member Dr. Henry Gong, who recently passed away.

Henry Gong, Jr., M.D.

May 23, 1947 – August 17, 2007



- Physician
- Researcher
- Advocate for clean air

Dr. Gong was born on May 23, 1947, and died on August 17, 2007 following a heart attack. He filled a number of roles through his life, including physician, researcher, and advocate for clean air.

Education and Professional Activities

- BA, University of the Pacific, 1969
- MD, University of California at Davis, 1973
- Professor and Actively Practicing Physician
 - UCLA Medical Center, 1977 – 1993
 - Rancho Los Amigos National Rehabilitation Center, 1992 – 2007
 - USC Keck School of Medicine, 1992 – 2007
- More than 250 publications

Dr. Gong was born in Tulare and grew up in the Central Valley of California, the fourth child of immigrant parents. He received his bachelor's degree in biology from the University of the Pacific, and his MD degree at UC Davis. He subsequently completed his residency at Boston University Hospital, and a fellowship in pulmonary medicine at UCLA. He was Board certified in internal medicine, with a specialty in pulmonary medicine. He was also a diplomate of the National Board of Medical Examiners.

Dr. Gong was a professor in the medical schools at UCLA and later at USC. He actively practiced medicine, and performed research that was published in over 250 scientific papers, book chapters, and reviews. He was also a peer reviewer for 20 scholarly journals.

Research Contributions

UCLA

- Effects of ozone on simulated race performance in international level cyclists
 - Slower race times
 - Decreased lung function
 - Increased symptoms
 - Bronchodilator treatment did not prevent ozone-induced effects

Dr. Gong began his clinical, academic and research careers at UCLA, where he practiced and taught pulmonary medicine. He learned how to perform controlled human air pollution exposure studies at the Institute of Environmental Stress at UC Santa Barbara, and subsequently constructed a human exposure chamber facility at UCLA where he performed his early air pollution research.

His initial studies at UCLA focused on how ozone affected the race performance of international level cyclists. He found that when simulated races were performed in an atmosphere containing (0.20 ppm) ozone, these elite athletes were not able to perform at as high a level as in clean air. Their race times became slower, their lung function decreased, and they developed symptoms of lung irritation.

He also tested the hypothesis that ozone-induced adverse health effects would be prevented by bronchodilator, a drug used by asthmatics, but he found that bronchodilator treatment did not alter ozone-induced responses, showing that ozone effects are not mediated through the same pathways as asthma.

Research Contributions Rancho Los Amigos

- Responses to ozone in asthmatics similar to non-asthmatics
 - Responses decrease with repeated daily exposures
 - Responses return to baseline when exposures cease
- In cardiac patients, ozone exposure can
 - Make the heart work harder
 - Alter oxygen exchange across the lung membranes
- COPD patients exposed to ozone had
 - Lung function responses to ozone similar to healthy adults
 - Greater risk of adverse responses due to reduced baseline lung function

In 1992 Dr. Gong moved to the Rancho Los Amigos National Rehabilitation Center, where he became the director of the environmental exposure laboratory, and also joined the faculty of the USC Keck School of Medicine.

Dr. Gong's research at Rancho Los Amigos included air pollution health effects investigations primarily on ozone, but also more recently on concentrated ambient particles.

He was the first to report that responses to ozone attenuate, that is, become smaller, in asthmatics who are regularly exposed to elevated levels of ozone and return to baseline once regular exposures end.

In an ARB-funded study, he was the first to expose cardiac patients to ozone in a chamber. The results of this work suggest that ozone exposure can make the heart muscle work harder, and can impair oxygen delivery to the heart muscle in people who have pre-existing heart disease.

Another ARB-funded study investigated the responses of patients with chronic obstructive pulmonary disease (COPD) to ozone. The COPD patients had similar decreases in lung function as those of healthy people, but they can be at increased risk due to their disease-related compromised lung function. This is one of the few studies in the literature on COPD patients.

Research Contributions (con't)

Rancho Los Amigos

- Age-related lung function decline was not related to responsiveness to ozone
- Longer-term exposure to concentrated ambient particles required to induce adverse effects

Several of Dr. Gong's lines of research produced unexpected results, and showed us that what we think we know to be true, isn't always.

For example, Dr. Gong's third ARB-funded study addressed the concern that people who have larger lung function decreases with ozone exposure might be at increased risk of rapid lung function decline if they are chronically exposed to ozone. Dr. Gong found this relationship to be untrue

Dr. Gong's most recent work includes a series of papers on the responses of healthy adults and patients with asthma or COPD, who were exposed for two hours to concentrated particulate matter from ambient air. Surprisingly, these acute exposures had few and inconsistent effects on the subjects in all three groups of people, which suggests that longer-term exposures may be required to induce adverse health effects, a result which is supported by the epidemiologic literature.

Advocate for Clean Air

- Member of U.S. EPA's Clean Air Scientific Advisory Committee for ozone and PM
- Awards
 - U.S. EPA
 - Coalition for Clean Air
 - South Coast Air Quality Management District
 - American Lung Association

Dr. Gong was a well known advocate for clean air. He was a member of the U.S. EPA Clean Air Scientific Advisory Committee for PM and ozone, which advises the EPA administrator on national ambient air quality standards.

He received awards for his contributions to clean air from the U.S. EPA, the Coalition for Clean Air, the South Coast Air Quality Management District, and the American Lung Association.

US EPA: Environmental Achievement Award

Coalition for Clean Air: Carl Moyer Award

South Coast AQMD: Robert M. Zweig, M.D. Memorial Award

American Lung Association: Clean Air Award

Advocate for Clean Air (con't)



Member, California Air Resources Board
Appointed August 2004

In 2004, Gov. Schwarzenegger appointed Dr. Gong to the Air Resources Board as the medical member. In that capacity he contributed the perspective of a physician, scientist, and researcher to the deliberations of the Board. He was also an active advisor to the annual health research plan.

Dr. Gong will be remembered for his kindness, grace, gentle humor, and encouragement to staff, in addition to his contribution of focusing the Board's attention on the health impacts of air pollution, and on the need to control it.

This concludes my presentation. Thank you for the opportunity to highlight Dr. Gong's career and scientific contributions to the field of health effects research.

Henry Gong, Jr., M.D.
1947 - 2007

